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(54) Window winder operated by unified kinematic chain

(57) A window winder operated by a unified kinematic chain, in which the movement of the kinematic chain is carried out by means of a rotating member operated either manually (8,10) or electrically (9), with the chain being common to both, of either the sealed

(closed) or open type, based on a cable, a toothed belt, chain, worm-screw - rack ... etc. The operating or drive system is interchangeable, and can be adapted to one system or the other, without having to modify any details of the vehicle door or of the said chain.

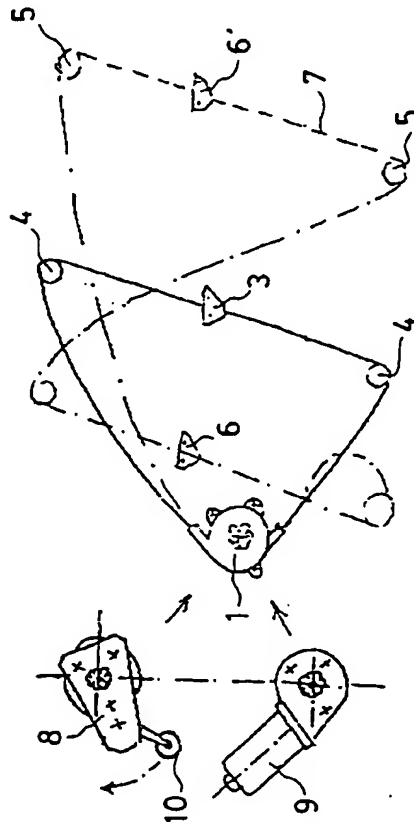


Fig.: 1

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Description

This invention relates to a window winder or regulator operated by a unified kinematic chain, applicable to the construction of window winders for vehicles in general.

As far as is known in the field of window winders, manually operated units are known and also others which are electrically operated, in which kinematic chains suitable for each kind of drive are used, with these chains being different from each other.

This type of conventional manufacture means that, according to the type of drive, one or the other kinematic chain must be used, which, without any doubt, causes a bothersome inconvenience.

It is an object of the invention to provide a window winder operated by a kinematic chain, both manually and electrically, in which the said chain is common, independently of whatever its drive might be, and, moreover, that the said drives are interchangeable with each other, so that one system can be adapted to the other without any need for modification whatsoever, neither on the vehicle door nor in the said chain.

The unified kinematic chain, which can be applied to single or double track or rail window winders, can be of any type, provided that the movement in the unit is carried out by means of a rotatable element, such as a drum, a crown wheel, a toothed pulley, etc., with this being the common connection element for both drive systems.

When the drive or operation is electrical, it will be composed of a motor-reducer, with or without a torque compensator at its power intake, and when the drive is manual, the arrangement of an internal parallel shaft reduction system is necessary, as well as a braking system, which might or might not have a torque compensator, according to what is convenient, on its power intake which must be identical to that of the electrical system so that the two can be interchangeable.

Fixing or securing the system, both manual and electrical, must be identical in both cases so as to perfectly ensure their interchangeability.

In this way, in the design of vehicle bodywork, and more specifically as regards the doors of the vehicle, a considerable degree of simplification can be achieved by being able to have the opportunity to standardize the face or side of the door destined for the drive unit from the ergonomic point of view for the manual drive, thus allowing the implantation of both replaceable or interchangeable systems.

From the construction or manufacturing point of view, the maximum of simplicity can be achieved, given that a large number of standard components can be used for either of the applications. All of this leads to a considerable cheapening of the product, a high degree of flexibility in assembly lines, a reduction in the investment required and, finally, an increase in the quality of the product.

At the same time, and given versatility of the system, simplification can be obtained, not only in the assembly phase but also during its use and replacement, in such a way that an extremely interesting logistics system is established, in view of the reduction in the amount of references that can be reached.

- Figure 1 is a general view that includes the window winder elements according to the invention.
- Figure 2 shows the electrical drive by means of a motor-reducer.
- Figure 3 represents the manual drive with a reduction and compensation system.
- Figure 4 shows the support which is common to both drive systems in double track window winders.
- Figure 5 allows the window winder to be observed, operated by a unified kinematic chain, with electrical drive and a double track.
- Figure 6 shows a double track window winder with a unified kinematic chain and manual drive.
- Figure 7 presents a unified kinematic chain with a single track window winder, which can be adapted for the electrical drive, in accordance with Figure 2, or the manual drive, as shown in Figure 3.
- Figure 8 shows a single track window winder with a unified kinematic chain, adapted for the manual drive system, as shown in Figure 3.

Looking now at Figure 1, we can appreciate the synthesis of the invention, with a manual drive (8, 10) or an electrical drive (9) to be fitted onto its seating (1), inside which a rotatable member is provided, depending on the option desired. The whole assembly can be of the single track type, with the wire or conductor (2), the pulleys (4) for the said wire, as well as the window glass drive element (3), which is not shown.

This assembly can, in the same way, be established as a double track unit with the wire or conductor (7), the end pulleys (5) and the two drive elements (6,6').

Turning next to Figure 2, we can observe a unit which is electrically operated by means of a motor-reducer (9) connected with the cable drum crown wheel (18), while Figure 3 shows a manually operated unit (8) which includes a reduction system based on a pinion (13) and a crown wheel (14).

Both units are capable of being housed on the common support (22) shown in Figure 4, where it is possible to appreciate the casing (16) of the cable drum, as well as the drill hole (15) for the outlet (takeoff) of the manual drive and the guide outlets (17) for the flexible wires or conductors. This support (22) is applicable to double track window winders.

One application of the two techniques can be seen in Figure 5, according to which the assembly shown in Figure 2, together with the electric motor (9) and the guide outlets (17) for the flexible wires or conductors (7,7'), has been placed on the support (22). These two flexible wires are directed towards the ends (5,5') of two

strips or profiles (11,11') in which the drive elements (6,6') for the window glass move.

Similar conditions are expounded in Figure 6, in which the manual unit (8,10) can be seen housed on the support (22), with the recess (16) for the drum casing.

When the window winder or regulator is of the single track type, the solution shown in Figure 7 can be appreciated. Here, the seating part (1) for the drive in question is shown, with the cable drum casing (16) and the drill hole (21) outlet for the shaft of the manual drive, as well as the two outlets (13) for the cable (2), the strip or guide (12) and the drive element (3). In this arrangement, either the manual drive device or the electrical drive device can be fitted.

Figure 8 shows the single track window winder operated by a unified kinematic chain, in which the manual drive system (10) has been arranged, while also appreciating the winder handle (10), the cable drum casing (16) and the position (20) that represents the brake retainer.

It is important to point out, once having described the nature and advantages of this invention, its non-restrictive character, inasmuch as changes in the shape, materials dimensions of its constituent parts will not in any way alter its essence, as long as they do not mean a substantial variation of the whole assembly.

Claims

1. Window winder operated by unified kinematic chain, with a kinematic transmission chain (2,7), a drive system of any kind whatsoever for the said chain (8,10,9), a drive slide (3,6) for the vehicle window glass and some passage points for the said kinematic chain, is characterized in that the transmission system for the kinematic chain is carried out by means of a rotatable member (1), which is connected, indistinctly, to the manual drive (8,10) or the electrical drive (9), according to the case, with the kinematic chain being common to both.
2. Window winder operated by unified kinematic chain, in accordance with claim 1, characterized in that the kinematic chain can be sealed (closed) or open, using a cable, toothed belt, chain or worm-screw - rack.
3. Window winder operated by unified kinematic chain, in accordance with claims 1 and 2, characterized in that when the drive is electrical, it can be provided with a torque compensation system, by means of a compensator spring, with which a considerable reduction in the motor power is achieved.
4. Window winder operated by unified kinematic chain, in accordance with claims 1 and 2, characterized in that when the drive is manual, an external

or internal parallel shaft reduction box is provided, with a braking system on the winder handle drive shaft, while also possibly using a torque compensator by means of a compensator spring acting on the outlet shaft or power takeoff.

5. Window winder operated by unified kinematic chain, in accordance with claim 1, characterized in that the adaptation of the manual or electrical drive to the kinematic chain is carried out using the same method or system, bolting, riveting or clipping together, equally for both applications, which means that the system is interchangeable.
6. Window winder operated by unified kinematic chain, in accordance with claims 1,2,3,4 and 5, characterized in that, whether the drive is manual or electrical, the system can either have or not have a torque compensator.

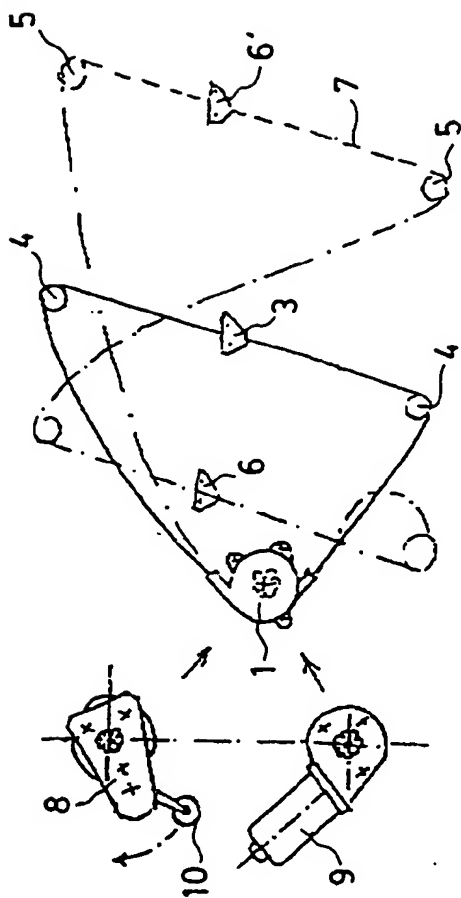


Fig.: 1

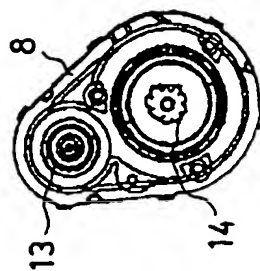


Fig.: 3

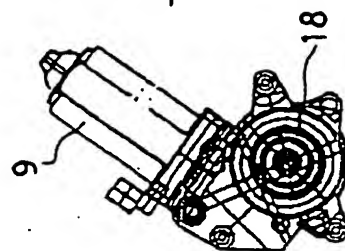


Fig.: 2

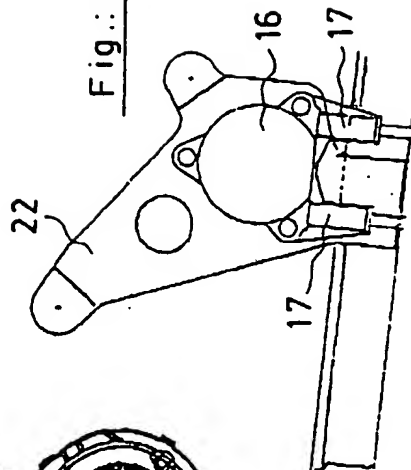
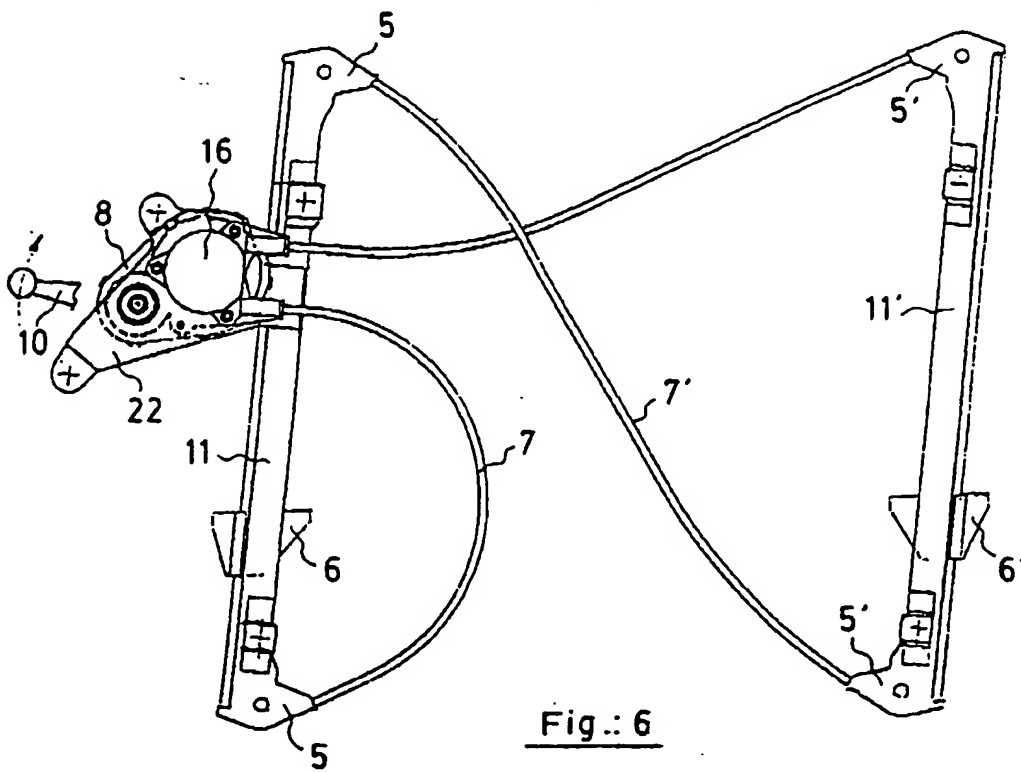
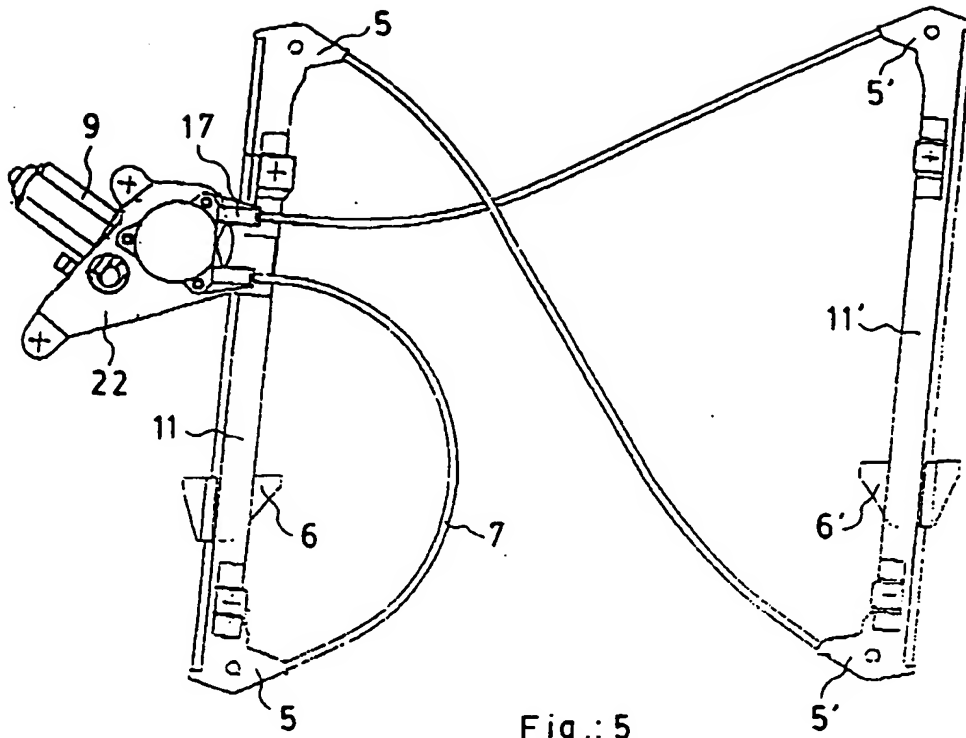


Fig.: 4



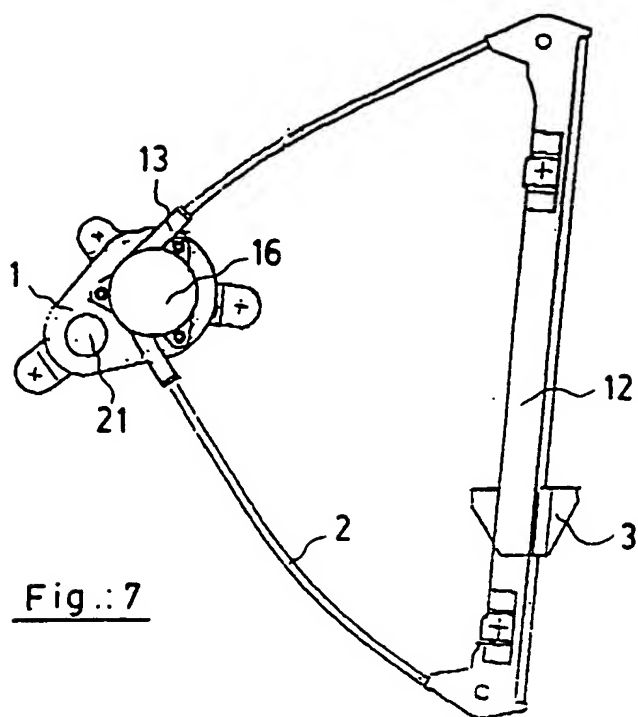


Fig.: 7

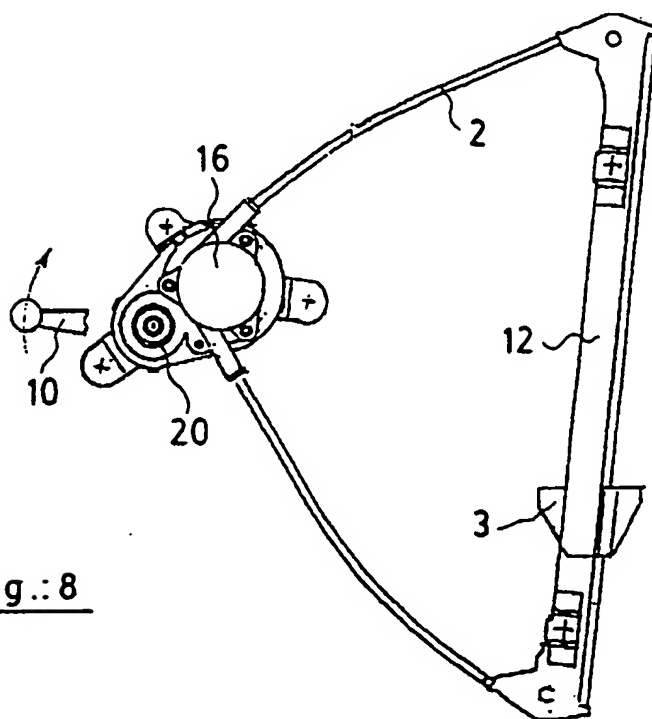


Fig.: 8



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EUROPEAN SEARCH REPORT

Application Number
EP 95 50 0169

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	DE-A-16 30 609 (KÜSTER & CO, SPEZIALFABRIK FÜR DIE AUTOMOBIL- UND MOTORRAD-INDUSTRIE)	1-3,5	E05F11/48 E05F11/50
Y	* page 7, paragraph 1 - paragraph 2; figures 1,3 *	4,6	
Y	GB-A-2 062 746 (KÜSTER & CO.) * page 2, line 5 - line 11 * * page 2, line 64 - line 66; figures 1,2 *	4,6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			E05F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 May 1996	Examiner Guillaume, G
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